Customer Knowledge Management Maturity Model for insurance sector

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ABSTRACT: The aim of this paper is to develop a model for identifying the status of customer knowledge management (CKM) in insurance organizations. In this paper, the customer processes in insurance companies identified through interview with several insurance experts. Then we customized the existing CKM maturity model (CKMMM) for insurance industry by integrating the customer processes with the CKMMM. Also a tool was designed based on the created model for measuring CKM maturity in insurance sector. Running the developed model in 10 insurance companies, it was found that most of them were in level 1 or 2 of maturity. We described one of them as an example to show the usage of the model. The proposed model along with its relevant tool helps insurance managers to assess the current maturity of their CKM and take suitable required actions by considering the potential of future growth and moving toward desired status. Moreover, single linear regression was applied for studying the relationship between CKM maturity level and market share. Results confirmed the existence of a correlation between CKM maturity level and market share, thus encouraging for more research about CKM implementation in insurance sector.
Key words: customer knowledge management, customer relationship management, knowledge management, insurance, maturity model, market share

INTRODUCTION

Knowledge management is the process of managing knowledge so that the available knowledge assets can be used and new opportunity can be created (Quintas et al., 1997). On the other hand, increasing competition and decreasing customer loyalty have led to the emergence of customer relationship management (CRM) that focuses on the extending relationships to the customers (Gebert et al., 2005). A CRM business process involves the processing of customer knowledge to pursue the goals of the relationship marketing. It also involves direct customer contact and the exchange of information or services between enterprise and customer (Gebert et al., 2003). Customer relationship management is defined by researchers as building and managing of customer relationships on an organizational level through understanding, anticipating and managing of the customer needs, based on the knowledge gained from the customers in order to increase organizational effectiveness and efficiency and thereby increasing profitability. Hence, customer relationship management systems can be seen as a subset of knowledge management systems (Plessis and Boon, 2004) and the major sub processes of the CRM macro level process include knowledge and interaction management (zablah et al., 2004). Managing of customer knowledge is crucial because it directly contribute to the competitive advantage and financial performance of a firm (Lin et al., 2006; Sue et al., 2006; Salojärvi et al., 2010). Customer knowledge management (CKM) is about gaining, sharing, and expanding the knowledge residing in customers, to both customer and corporate benefit (Gibbert et al., 2002). Literature review shows that pioneer companies could gain benefits from CKM through customer portfolios, spreading customer segmentation, marketing communication and promotions, product quality, new product development, fashioning business processes and customer service, supporting call centers and selling customer knowledge (Gibbert et al., 2002; Su et al., 2006; Rowley, 2005; Salomann et al., 2005; Thomke & Hippel, 2002; Massey et al., 2001; Reichold et al., 2004; Lee & Yang, 2001; Murillo & annabi, 2002). Based on these successful experience of KM in CRM processes, Researchers have developed some frameworks to help managers in implementing CKM (Bose & Sugumaran, 2003; Campbell, 2003; Gebert et al., 2005; Su et al., 2006; Salomann et al., 2005; Lin et al., 2006). Moreover, a measuring instrument is required for identifying the current status and potential of growth of CKM in organizations. We identified four CKM implementation model (Gebert et al., 2003; Salomann et al., 2005; Lin et al., 2006; Su et al., 2006) but their focus are more on implementing CKM rather than measuring CKM`s organizational maturity level. Ranjbarfard and Aghdasi (2008) developed a general CKM maturity model that measures the CKM maturity based on five aspects including strategy, processes,

technology, systems and human resources process. But this model is general and not necessarily considers the requirements of a specific sector of industry. Recognizing this gap and focusing on the insurance sector, we shaped our research questions as below:

How can an insurance company asses it`s CKM maturity level?

Is there a significant relationship between the CKM maturity level of the Iranian insurance companies and their market share?

So, to respond these questions, our primary goals of this paper are:

Identifying customer processes in insurance companies

Developing CKM maturity model in insurance companies

Developing CKM maturity measurement tool for insurance sector

Measuring CKM maturity in an insurance company by deploying the tool.

Examining the existence of a significant relationship between CKM maturity level and market share in Iranian insurance companies.

In the remain of this paper we present a literature review of the customer knowledge management and knowledge resource measurement in section 2 and research methodology in section 3. Then, Customer Knowledge Management Maturity Model (CKMMM) will be overviewed in section 4. Identification of the customer processes will be explained in section 5. Next in section 6, we will explain the process of developing CKM maturity model for insurance sector based on the CKMMM. After that in section 7, we will run the model in 10 insurance companies and explain one case as an example for model deployment. Section 8 illustrates the existence of the relationship between CKM maturity and market share. Ultimately in section 9 we will offer conclusion and several suggestions for future research.

Literature Review

Although customer relationship management tries to keep long-term relationship with customers and gaining their satisfaction, but all customers are not the same in creating profit for the company. They don`t have the same expectation from consuming a product or service. Customer knowledge should be managed to insure that the products and services are suitable to customer needs. Unfortunately most of the companies have neglected from the importance of the knowledge resided in the customer relationship management. Creating and managing customer relationship in the organizational level is conducted through understanding, predicting and managing customer needs based on the customer knowledge (Davenport et al., 2001). Thus, the existence of sufficient and continually updated customer knowledge is critical for an effective CRM system (Stefanou & Sarmaniotis, 2003). The integration of KM and CRM is a strategic issue which strongly impacts on the long-term competitiveness of organizations (Anthony Liew, 2008). "CKM needs to provide customer insight, profiles, habits, contact preferences and understanding to improve an organization's contact with the customer" (Xu & Walton, 2005).

Leader companies have reached great benefits of integrating KM initiatives with CRM practices and considerable research have been done about customer knowledge management (CKM) during last decade (example: Rowley, 2004; Rowley, 2005; Campbell, 2003; Gebert, Salojärvi et al., 2010; Sulaiman et al., 2011; Mukherji, 2012) especially for key account customers (e.g., Abratt & Kelly, 2002; Arnold et al., 2001; Birkinshaw et al., 2001; Nätti et al., 2006; Shi et al., 2005). For example, Skyrme and Amidon (1997) surveyed European and North American companies in KM practices and reported that 96% of them appraised customer knowledge as the most imperative asset in preserving competitiveness. Roscoe (2003) discussed that marketers should embrace CKM in order to deliver a gainful relationship. Chase (1997) found that customer-focused knowledge was the most desired type of KM practice in a sample of companies which applied KM philosophy and initiatives (Stefanou & Sarmaniotis, 2003). Customer knowledge enables organizations to make intelligent decisions such as what channel to be used for which customer to deliver what product or service (Rosco, 2003). Researchers defined CKM in various ways such as:

Acquiring, sharing and promoting customer knowledge for the benefit of company and customer (Gibbert et al., 2002).

"Managing customer knowledge to generate value-creating lock-ins and channel knowledge to strengthen relationships and collaborative effectiveness, knowledge-enabled CRM is more of a business model/strategy than a technology-focused solution" (Tiwana, 2000).

Paquette (2005) defined CKM as "the methodologies and systems employed in the acquisition and distribution of valuable customer derived information". In his definition, CKM, is more than capturing transactional information, rather extends to the development of strategic partnerships and new products. He believes that, CKM includes the processes and the tools for capturing, managing, and distributing knowledge in relation to the provision of customer services or products within an organization. CKM captures and organizes

knowledge gained by company and its customer sharing platforms and processes, in order to share and discuss this data throughout the organization.

As mentioned above, customer knowledge base is considered as one of the most important knowledge sources in KM (Davenport & Klahr, 1998; Lesser et al., 2000) and consequently must be considered at the front line of the KM initiatives (Bennet & Gabriel, 1999; Chase, 1997 cited by Rowley, 2005). Customer knowledge differs from customer data and customer information (Minna & Aino, 2005). It is dynamic and changes rapidly. Also it is often tacit and dispread (Davenport & Klahr, 1998) and these characteristics make it difficult to be located and shared (Zack, 1999). Gebert et al. (2003) classified customer knowledge into three categories including: 1) knowledge *about customers:* "accumulated to understand customer's motivations and to address them in a personalized way", 2) knowledge *for* customers: "examples include knowledge on products, markets and suppliers and 3) knowledge *from* customers: "is customers` knowledge of products, suppliers and markets".

Customer knowledge can be gained from various ways such as market-research agencies, customer visits, telephone Conversations, web site log and etc. (Day, 2000). Customer interaction is an important way of gaining customer knowledge (Salojarvi & Sainio, 2009) which enables the salesperson to collect knowledge about their customer`s product preferences, specific features of competing products, and also about the industry (Garcıa-Murillo & Annabi, 2002). As Lesser, et al. (2000) indicated, the availability and usage of customer knowledge can be enhanced through customer knowledge development dialogues, customer knowledge communities, facilitating the capture of knowledge relevant data, and demonstrating enterprise leadership commitment to customer knowledge. As Lin et al., discussed, the CRM process is a knowledge-oriented process due to its knowledge intensity and complexity features (Lin et al., 2006). They developed a model of knowledge-enabled customer relationship management that illustrates how KM can improve CRM. This model shows the relationship among customer knowledge sources, customer knowledge management and customer knowledge performance measurement (Lin et al., 2006). Based on the literature analysis and six years of action research, Gebert et al. (2003) developed a CKM model that supports the KM within a business environment. This model supports four KM goals including Knowledge transparency, dissemination, development and efficiency and has four facets including content, competence, collaboration and composition. Doing a cross-case analysis among three companies that managed three kinds of customer knowledge including knowledge for, from and about customers, Saloman et al. (2005) presented a framework for knowledge-based CRM. This framework consists of strategy, processes, systems and change management aspects. In this paper they presented a cross-case analysis of three companies as "good practices" in rejuvenating customer management through managing knowledge for, from or about customers effectively. They identified key success factors for implementing knowledge-based CRM initiatives by means of an orchestrated approach that considers strategy, processes, systems and change management aspects. Using this framework in CKM initiatives enables managers to effectively make use of knowledge for, from and about customers.

Su et al. suggested an E-CKM model along with a methodology to support managing customer knowledge in order to develop innovative products. This model Incorporates Information Technology (such as web-based survey and data mining) into CKM process and considers knowledge for, from and about customers (Su et al., 2006). Salojarvi and Sainio (2009) identified the dimensions of customer knowledge processing (CKP) for key account management. They discussed that CKP is made up of knowledge acquisition, dissemination, and utilization and the degree of acquisition and utilization is significantly related to the supplier's key account performance. Massey et al. (2001) explained an IBM`s initiative for re-engineering it`s customer relationship management processes. Xu and Walton (2005) examined how analytical CRM systems can support customer knowledge. Peng, Lawrence and Koo (2009) proposed an analytical CKM model for marketing process. Some researchers have proposed data mining techniques for managing customer knowledge (Shaw et al., 2001; Liao et al., 2010). Bueren et al. (2005) proposed a CKM framework which contains six core processes of CRM (campaign, lead, offer, contract, complaint and service management) and four building blocks of KM and applied the framework in a number of action research cases. Sedighi et al. (2012) developed a CKM process model with the aim of customer value augmentation. In this model, all forms of CRM including operational CRM, analytical CRM and strategic CRM, are employed for supporting all the phases of CKM that is customer knowledge creation, retention, transfer and application.

Measuring Knowledge Resources Performance

Some papers studied the definition and measurement of knowledge assets and intellectual capitals (Wilkins Van Wegen & De Hoog, 1997; Liebowitz & wright, 1999). Examples of tools and methods for measuring knowledge capitals are balanced score card (BSC), maturity models, rate of return method (ROI), and gaining personnel points of view which measure knowledge value and knowledge improvement in an organization. Famous models which are based on BSC, include Skandia Navigator, APQC, KVA methodology, KMAT and etc. (Andersen, 1995; Housel & Bell, 2001; Freezem & Kulkarni, 2005). The current paper uses

maturity model to measure CKM. Maturity models explain the growth of an entity over time, the entity can be anything that is of interest, e.g. human being, an organizational function, technology and process. Most of the maturity models make use of the primary structure from the capability maturity model (CMM) which developed by software engineering institute/Carnegie Mellon (SEI). CMM is arranged in five levels to prioritize the maturity levels of a software process. Researchers have defined CMM as "a model that provides a roadmap to implement progressive changes on different organizational processes" (Curtis Hefley & Miller, 2001). Normally, maturity models have the following properties (Pee et al., 2006):

The development of a single entity is simplified and described with a limited number of maturity levels (usually four to six);

Levels are characterized by certain requirements, which the entity has to achieve on that level;

Levels are ordered sequentially, from an initial level up to an ending level (the latter is the level of perfection);

During development, the entity progresses forward from one level to the next. No levels can be skipped.

Pee et al. reviewed 9 knowledge management maturity models and developed General Knowledge Management Maturity Model (G-KMMM). Ranjbarfard and Aghdasi (2008) used this model for developing CKM maturity model (CKMMM). GKMMM is defined by five levels including initial, aware, defined, managed, and optimizing which define organizational knowledge management maturity through three dimensions that are people/organization, process and technology. Incorporating CRM processes of an insurance company and considering its special requirements to CKMMM, we developed CKM maturity model for insurance sector. This model was applied in practice and the results were reported in this paper.

RESEARCH METHODOLOGY

This Research was done in 3 steps. First Customer processes of insurance companies were identified in step 1 through interview with insurance experts. Integrating five levels of CKM maturity model, with customer processes in insurance sector, CKM maturity model of insurance companies was developed in step 2. This model consists of five maturity levels so the company to be measured has attributes of one maturity level in the perspective of strategy, process, technology, integration and human resource. In Step 3, a questionnaire was designed based on the model as an insurance CKM maturity measurement tool that makes the deployment of the model easier. The questionnaire was run in 10 of 16 Iranian insurance companies. Cronbach's α statistic is frequently used to evaluate the internal consistency of the instrument (Cronbach, 1951). The estimated values of the Cronbach coefficient alpha for the constructs are depicted in Table 1. They all are satisfactory for survey research (Nunally & Bernstein, 1994; Streiner, 2003). Therefore, the consequences derived from the questionnaire were consistent.

Table 1: the value of Cronbach's α statistic

construct	strategy	processes	technology	integration	Human resources
α	0.846	0.85	0.791	0.793	0.839

We will explain our measurement in one of them as an example to show the usage of the model and it`s relevant tool. The out coming results will be explained in section 6.

Customer Knowledge Management Maturity Model (CKMMM)

This paper is based on the work of Ranjbarfard and Aghdasi (Ranjbarfard & Aghdasi, 2008) in which CKM maturity model was developed. In abstract, first by reviewing the literature, they found that five critical success factors including strategy, processes, technology, integration and human resources have been the most repetitive factors among various studies. Then CKM maturity model was developed by considering and adapting KM maturity models including Siemen's KMMM (Ehms & Langen, 2002), KPQM (Paulzen & Perc, 2002), Infosys'KMMM (Kochikar, 2000), KMCA (Kulkarni & Freeze, 2004), GKMMM (Pee et al., 2006), Klimko (Klimko, 2001), 5ikm3 (Mohanty & Chand, 2004) and Knowledge Journey KM maturity (KPMG knowledge journey) models (KPMG, Research Report 2000). The maturity levels and the definition of each level were created by integration of the related definitions of considered KM maturity models. Categorizing the characteristics of each maturity level by considering the CKM critical success factors, Ranjbarfard and Aghdasi (2008) developed the final CKM maturity model.

Identifying Customer processes of insurance companies

In this research, customer processes of insurance companies identified by interviewing with some experts of the field and studying related research (such as Gebert et al., 2003). The core processes including marketing, sales and after sales services and their relevant sub-processes are shown in Figure1.
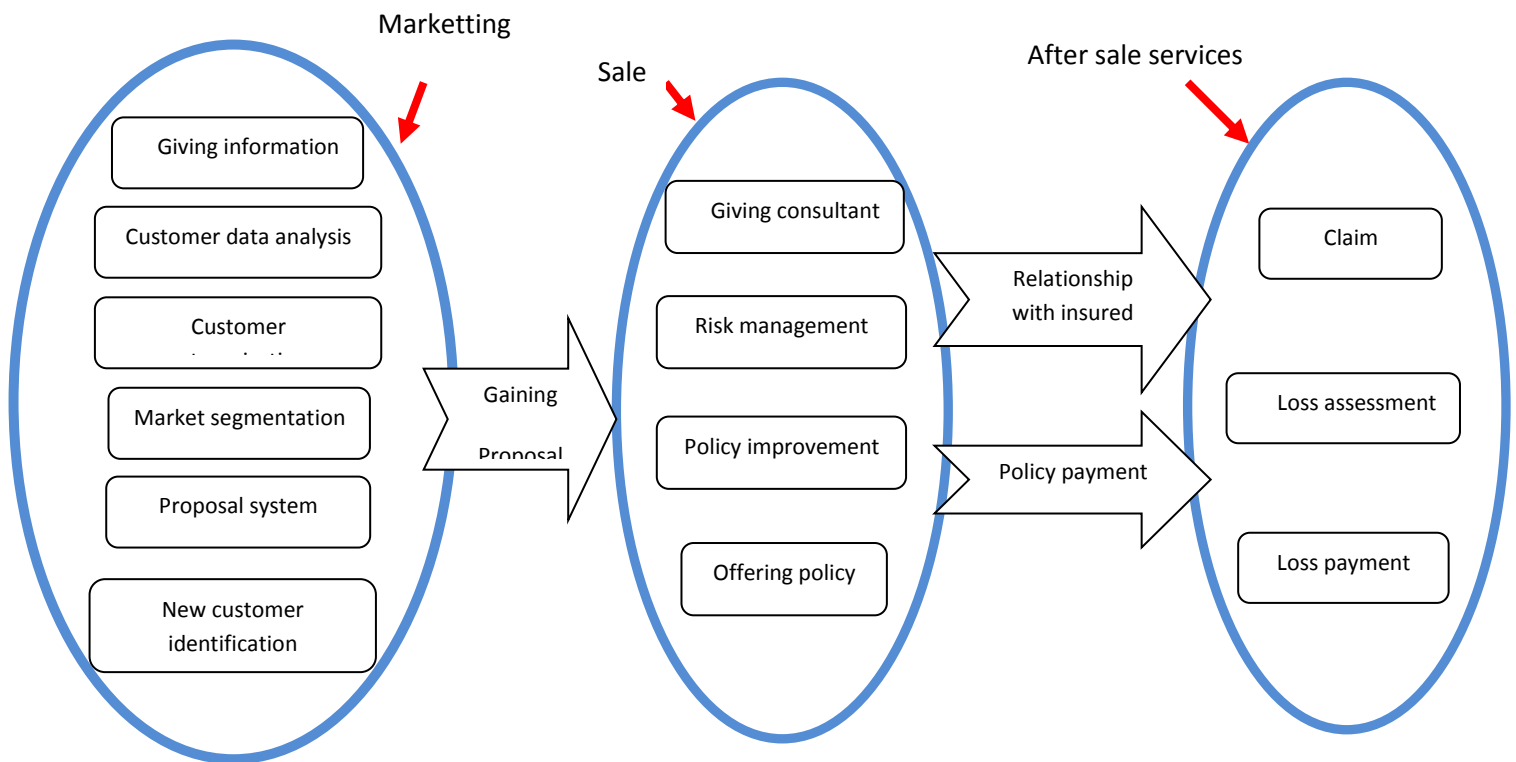
Figure 1: Customer processes in insurance companies

Developing CKM maturity model for insurance sector

We identified related attributes of each customer activities (of Figure 1) in each of the five maturity levels respecting to five CSFs. Indeed CKM maturity model of section 3 was used as our basic framework. Now, there is a framework for measuring the maturity of each activity in the point of five CSFs. Finally CKM maturity of insurance companies can be determined by using the maturity of customer related activities. As an example for definition of attribute of "announcing and advertisement about new products and services" activity in level 1 of maturity and in technology perspective (row1 and column 3 of table 2), first according to the CKM maturity model, it is found that there is no suitable technology or infrastructure for CKM. So we define that insurance companies in level1 use old methods such as advertisement in TV or newspaper and there is no use of new technologies like internet in the initial level. Respectively based on the CKM maturity model, it was defined that staff have no attention about getting information to customers and there is no responsibility about it as organization`s attribute of level 1 in the view of human resources. The accomplished model is shown in Table 2. Customer related activities are completed from level 1 through level 5 of maturity. As it is shown in Table 2, for customer announcing activities, technologies such as internet, phone, TV, fax, intranet and etc. is prepared in level 2 but there is no complete utilization.

Implementing CKM maturity model of insurance sector

As an example to show the usage of the model and it`s relevant tool (questionnaire) for CKM maturity measurement, we run the questionnaire based on the model in an insurance company. Totally, 8 peoples of experts and managers responded to the questionnaire. The average score of each question considered as the score of the related question. The lowest score of questions related to each CSF considered as the maturity of company in the related CSF and finally minimum of CSFs maturity regarded as the Total CKM maturity of the insurance company.

The results related to the one of the companies demonstrated that the company was in level 2 of maturity from the view of suitable strategy for CKM, level 2 in process maturity, level 2 for technology, level 2 in human resources and level 2 in integration therefore the CKM maturity of the company was in level 2 (minimum of CSFs maturity). Schematic trend of the mean of received responds is illustrated in Figure 2 which it`s vertical axis shows the maturity level and the horizontal axis shows the 24 questions.

Table2: CKM maturity model for insurance sector

Human resources	integration	technology	Process	strategy	CSFs/maturity level
Staff: -no attention, no responsibility to giving information to potential customers. - no interest of customer knowledge sharing which gathered in various ways - no aware, no responsibility of the necessity of marketing analysis - staff don't know about the value hidden in customer knowledge - there is no reward system which appreciate staff for gathering, saving, sharing, analyzing and using customer data and no sense for creating customer knowledge.	- Repetitive activities is required when offering New policy to an old insured because customer information is not accessible -offering Policy & tracking after sale in various department and various insurance services separately by agents, branches , broker and central department - no gathering, saving, sharing and analyzing customer data or doing accidently and without plan in some departments -claiming, perusing and payment activities done separately in different department and for different insurance services with no relationship	- using old way for giving information to customers including, posting letter, TV advertisement/newspaper.(no use of internet & Tel, CRM software) -using old way to register insured data (paper & physical attending of insured), no use of CRM software - no adequate hardware & software for marketing analysis -customer consulting & policy offering only by physical attending in agent or branches or center department - paying premium only by physical attending in bank or insurance company	-imperfect giving information to customers (not giving correct and timely information to insured and potential customers about new and previous services) with no control & evaluation -no formal process for marketing analysis (including insured data analysis, insured classification and market segmentation) - no plan & control for finding new insured & offering new insurance services - no formal process for gathering, saving and sharing marketing, sales & after sales data - no plan for proposals and criticisms from insured	-little or no attention for giving information to potential customers by senior manager -senior manager is not familiar with marketing analysis, risk management & evaluation, finding new prospects and aimed relationship & consolidation with insured - no system for getting insured proposals and criticisms	initial (Lack of awareness of the need of CKM and no intend to implement it)
Staff: - is aware of the importance of giving information to potential customers but there is no formal responsibility.	-there is some inconsistency in various departments for integrated gathering, saving, sharing and	- new technology for giving information to customers including, phone, TV advertisement/newspaper, internet, fax, intranet and etc is	specific activities is planned and related objectives, criteria, methods and responsibilities are	senior manager: -emphasizes on giving information to potential customers	aware (organization is Aware of importance of CKM and want to manage it but don't know about the way of

- is aware of the necessity of marketing analysis but there is no formal responsibility yet. - knows about the value hidden in customer knowledge and the usage of this knowledge. - only a little number of staff share customer knowledge which gathered in various ways - organization is aware of creating a reward system which appreciate staff for gathering, saving, sharing, analyzing and using customer knowledge	analyzing of customer data. -gaining proposal, offering consultant , risk management, improvement policy requirement , policy offering and relationship with insured done separately in different department but there is a sense or awareness of integrating them -claiming, perusing and payment activities done separately in different department but there is a sense or awareness of integrating them	prepared but don`t operate completely - using simple and current software to record insured information -There are engendering Various ways for paying premium by insured such as physical attending in bank, online payment, physical attending in branch or agency and etc. -adequate and efficient technologies (such as efficient software and hardware, internet, intranet, messaging system, CRM software and tec.) prepared for gathering, saving and sharing of customer information but there are not complete use of them yet. -giving consultant service to customer and policy offering done only by physical attending in agency or branches or center department.	specified and documented: - for giving information to customers also -for finding new insured & offering new insurance services. -for marketing analysis -for getting customer proposal and criticisms -for gathering, saving and sharing marketing, sales & after sales data	- is aware of marketing analysis, risk management & evaluation, finding new prospects and aimed relationship & consolidation with insured and introduces it in organization -defines a project for using knowledge capital of insurance or particularly for using hidden potential of customer knowledge. -customer knowledge is known as knowledge assets in organization - a project is defined for creating proposal and criticisms in organization	work)
staff: -are aware of the importance of giving information to potential customers and formal responsibility is defined - share customer information which is gathered through various ways. - are aware about the necessity of marketing analysis and formal responsibility is defined.	- not integrated gathering, saving, sharing and analyzing of customer information in various departments and there is some problems because of inconsistency -gaining proposal, offering consultant , risk management, improvement policy	-Using different technologies such as phone, TV, internet, fax, intranet and etc for giving information to customer but not integrally -there are various way of premium payment such as physical attendance in bank or branch or agency, internet and etc but they are not integrated. - efficient software and hardware is deployed not	the processes of below are done objectively according to predefined plan : -giving information to customer - finding new insured and offering new insurance services - gathering, saving and sharing marketing, sales & after sales data	-initial strategy of customer knowledge management and CKM evaluating measures is defined -senior manager understand his role very well in marketing analysis, risk management & evaluation, finding new	defined (Basic CKM infrastructure in Place)

- are learned how to gather, save, share and analyze customer knowledge. - Reward system which appreciates staff for gathering, saving, sharing, analyzing and using customer knowledge is defined. -organizational culture appreciates for sharing insured data in various departments and various insurance services.	requirement , policy offering and relationship with insured done integrally in different department of branches or agencies but there is little inconsistency. -claiming, perusing and payment activities done integrally in different department but there is a title inconsistency. -all information of an existing insured is not accessible when offering a new policy and most of the required activities must be repeated. -if an insured buys several insurance services then he/she will be seen as several insured in the view of company not one.	integrally for marketing analysis -adequate and efficient technologies (adequate and updated software and hardware, intranet, internet, messaging system and etc. is used for gathering, saving and sharing of customer information but not integrally. - There are various but not integrated technologies (internet, letter, software's, messaging system and etc.) for recording information about insured in various department. -there are various but not integrated and not aligned way of giving consultant to customers and policy offering such as physical attending in agency or branches or central department, internet, phone and …	-marketing analysis - gaining customer proposal and criticisms	prospects and aimed relationship & consolidation with insured and appreciate staff actively for doing this activities -customer proposal and criticisms in used in developing of marketing strategy - business advantages and impacts of gathering, saving, sharing and analysis of customer knowledge is observed in organization	
- Giving information to customer is done correctly by responsible staff and they share customer knowledge by other departments. -marketing analysis is done by . responsible staff and they share related information correctly and interestedly -sharing customer knowledge by staff in different departments result to bolster collective and collaborative organizational intelligence - gathering, saving, sharing	- Fully integrated gathering, saving, sharing and analyzing of customer information in various departments. -gaining proposal, offering consultant, risk management, improvement policy requirement , policy offering and relationship with insured done very integrally in different department of branches	-using different and integrated technologies such as phone, TV, internet, fax, intranet and etc for giving information to customer. Also the effect of these technologies on CKM is measured. -using different integrated technologies to record insured information in various departments. Also the effect of these technologies on CKM is measured. -efficient software and hardware is used for integrally	the processes of below are done objectively according to predefined plan also controlled and evaluated regularly based on related predefined criteria: -giving information to customer - finding new insured and offering new insurance services - gathering, saving and sharing marketing, sales &	-required initiative in gathering, saving, sharing and analysis of customer knowledge for gaining advantages and usage of CKM is understand well -CKM is considered in developing strategic objective of organization - Degree of success in deploying customer knowledge is measured	Quantitatively Managed/Established (CKM initiative is institutioned in organization also metrics are used to govern CKM)

and analysis of customer knowledge is done correctly by related responsible staff and they share related information correctly and interestedly by other staff. - There is reward system which appreciates staff for gathering, saving, sharing, analyzing and using customer knowledge and it is evaluated and controlled quantitatively. -Organizational culture of sharing insured knowledge in various departments and various insurance services is bolstered.	or agencies. -claiming, perusing and payment activities done very integrally in different department. -All information of an existing insured is accessible when offering a new policy and there is no repetitive activity. -if an insured buys several insurance services then he/she will be seen as one insured in the view of company	marketing analysis. Also the effect of them on CKM is measured. -there are various integrated and aligned way of giving consultant to customers and policy offering such as physical attending in agency or branches or central department, internet, phone, internet and etc. - Customer information is saved and categorized in central knowledge warehouse integrally. -using efficient and adequate technologies for gathering, saving and sharing of customer information integrally. Also the effect on CKM is measured. - Different way of premium payment are fully integrated and cooperated. Also the effect of them on CKM is measured.	after sales data -marketing analysis - gaining customer proposal and criticisms	by criteria.	
-staff who are responsible for giving information to customers use common ways to create knowledge with other staff and they are flexible in front of new challenges. -staff who are responsible for marketing analysis use common ways to create knowledge with other staff and they are flexible in front of new challenges. - gathering, saving, sharing and analysis of customer information by related responsible staff and they are	- fully integrated gathering, saving, sharing and analyzing of customer information in various departments and they are improving continuously -gaining proposal, offering consultant, risk management, improvement policy requirement , policy offering and relationship with insured done very	-Using different and integrated technologies such as phone, TV, internet, fax, intranet and etc for giving information to customer. the effect of these technologies on CKM is measured and they are improving continuously -using various technology (such as internet, message system, software and etc.) To record customer information and they are improving continuously -efficient software and hardware	the processes of below are done objectively according to predefined plan also controlled and evaluated regularly based on related predefined criteria also are reviewed continuously to cover new requirement of business: - getting information to customers - finding new insured and offering new insurance services	-successes resulted of deploying customer knowledge in insurance is reported to stakeholders such as market segmentation, designed new services and consequently raised sale, reducing loss as a result of risk management, increasing the number of customer and etc. - continuous improvement of	Optimizing/Continuously Improving (Existing CKM can be adapted flexibly to meet new challenges .Also there is Continual improvement of CKM practices and tools)

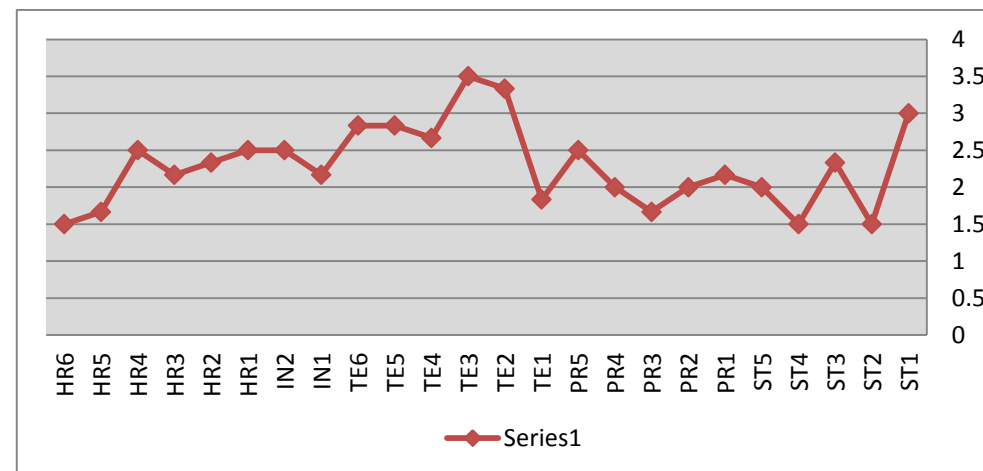|				
flexible in front of new challenges. -sharing customer data among staff has lead to knowledge creation and consequently more flexibility of staff in front of new challenges. -There is a reward system which appreciate staff for gathering, saving, sharing, analyzing and using customer knowledge and it is evaluated and controlled quantitatively also it improve continuously. - Organizational culture of sharing insured knowledge in various departments and various insurance services is institutionalized.	integrally in different department of branches or agencies and they are improving continuously. -claiming, perusing and payment activities done very integrally in different department and they are improving continuously.	is used for marketing analysis integrally. Also these technologies are improving continuously. -using efficient and adequate technologies for gathering, saving and sharing of customer information integrally. Also these technologies are improving continuously. - Different way of premium payment are fully integrated and cooperated. also the effect of them on CKM is measured and they are improving continuously	- gathering, saving and sharing marketing, sales & after sales data -market analysis - gaining customer proposal and criticisms	organizational strategy in order to deploying potential hidden in customer knowledge

Figure 2: mean of responds schematic trend

Clarifying weakness and strength points of the company, proposal of improvement was given to the managers as below:

Senior manager has to learn about customer knowledge management and define a project for implementing CKM. Introducing CKM in the strategy development of the company leads to improvement in new product development, market segmentation, customer categorization and rise in sailing products and services.

For managing of customer knowledge capital, first it is crucial to establish the cycle of knowledge. Customer knowledge is fragmented across multiple systems and locations, so it's hard to incorporate it in an integrated customer profile (Davenport et al., 2001). Since CKM is a new concept, it is required to define CKM processes formally. These processes must do customer related activities so that customer knowledge gathered, saved and distributed among employees adequately. Then another process is required to analysis data and sends results to the related departments timely. Salomann et al. (2005) reported that more than 60 percent of the respondents in their study stated that they had not implemented systematic customer knowledge processes.

Customer knowledge utilization can be enhanced through CRM technologies (Salojärvi et al., 2010). "Modern CRM software packages include front office applications that access customer and product data as well as back-end systems including financials, inventory, and enterprise resource planning (ERP)" (Campbell, 2003). According to the gathered data of questionnaire, although there are technologies like internet and intranet but they are not aligning with CKM objectives. Another important point is considering information integration. Giving attention to this point is vital because even if a company uses all technologies in an adequate way, but without integration there will be still some problems.

Strategy, process, technology and human resource are required in CKM implementation but not sufficient. For achieving CKM objectives it`s necessary that five CSFs to be integrated. As an example if we develop strategy well, define CKM processes adequately, purchase new and efficient technology but human recourses haven`t qualification of CKM implementation then the desired improvement won`t be reached.
Human resources management has to struggle for learning staff about CKM. When employees will be aware of the role and importance of CKM, as a result, they will have more motivation and give more attention in knowledge sharing. Subsequently responsibilities must be determined in the formal processes of CKM. Use of reward system will enhance your endeavor.

Indeed CKM maturity model of section 4 can be served for measuring CKM maturity in insurance companies by a person who is expert in CKM researches through doing some interviews. But it is required to use an easy tool with an easy analysis for deploying by insurance experts who aren`t specialist in the field of this research. Moreover, the aforementioned tool should be run easily in a wide range of insurance companies. For those reasons, a questionnaire designed for measuring the maturity level of each CSF based on the improvement of the CSFs status in organization from level 1 to level 5 of maturity. Initial design of the questionnaire had consisted of 32 questions. We used explanatory and elective answers instead of Likert scale to prevent wrong interpretation of questions, receiving more precise answers and because research agenda was new and respondents had lack information about CKM. Then the number of questions reduced to 28 by taking the comments of some experts in the field of research. They defined insurance phrases to summarize the model and it`s tool and deleted some questions which were suspicious. After that, the questionnaire was confirmed by experts, it was run in a company for pretest which led to reducing the number of questions to 24 after analysis of completed questionnaires. Also cronbach` α was calculated equal to 0.889. The questionnaire can be found in the attachment of this paper. Each question measures the maturity level of a company`s attribute related to that questions. Ultimately the lowest score/respond associated to the all questions related to each CSF was considered as the score/ maturity level of the company in the view of that CSF. Respectively the lowest score among five CSFs was recorded as the final CKM maturity level of the company.

Table 3: CKM maturity level and market share of insurance companies

ROW	COMPNAY NAME	CKM MATURITY (MEAN)	MARKET SHARE
1	Alborz	2.8	7.44%
2	Parsian	2	5.61%
3	Mellat	2	4.05%
4	Karafarin	1.2	1.97%
5	Razi	1.8	1.05%
6	Day	1.6	0.66%
7	Novin	1.6	0.32%
8	Tosee	1.6	0.09%
9	Omid	1.4	0.04%
10	Pasargad	1.2	0.002%

Relationship between CKM maturity and market share

One of the important effects of CKM that mentioned in the literature is increasing the performance of the company in terms of profit, market share and etc. We used data of questionnaire for studying this effect.

For increasing precision, we calculated the mean of the maturity of factors. As it is obvious in table 3, the higher CKM maturity model, the higher market share we have. Computing Pearson coefficient, confirmed this by .098% level of confidence as illustrated in table 4.

Table 4: computing correlation coefficient

		marketshare	CKMlevel
marketshare	Pearson Correlation	1	.852(**)
	Sig. (2-tailed)		.002
	N	10	10
CKMlevel	Pearson Correlation	.852(**)	1
	Sig. (2-tailed)	.002	
	N	10	10

CONCLUSION AND FUTURE WORK

According to the CKM literature, a measuring instrument is required for leveraging the potential hidden in customer knowledge. This instrument can help managers to measure the current maturity of their CKM and take required actions by considering the potential of future growth and moving toward desired status.

In this paper, CKM maturity model for insurance companies was developed based on the general CKM maturity model (CKMMM). The model considers 5 critical success factors including strategy, processes, technology, integration and human resources for CKM and 5 level of maturity for each CFS. We designed a questionnaire as a tool for running the model easily by insurance experts and manager. This questionnaire was deployed for measuring CKM in an insurance company by 8 experts and managers. The results of the tool analysis clarified that the company was aware about CKM and it was in level 2 of maturity. It was in level 2 of maturity in the view of all five CSFs too. Analyzing question by question on the received responds, we found the strength and weakness points of CKM in the case and improvement proposals for getting forward to the higher level of maturity.

This paper have two contributes to the existing literature. First, two streams of research, customer relationship management and knowledge management are integrated with a view to measuring the maturity of insurance companies in terms of managing the knowledge of for, from and about customers. Second, through an empirical examination of the linkage between the dimensions of CKM and market share, this paper motivates for more research about CKM implementation in insurance sector.

Measuring more than one activity in one question was the most important constraint of this research but it was unavoidable because we wanted to raise the number of the responses and reduce the carelessness in respondents. Since deploying customer knowledge has outstanding advantages, we propose to the researches about developing some guidelines for promoting CKM maturity level of insurance companies in the future. Moreover, developing a model for CKM implementation in insurance companies will be another worthwhile area of research.

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